

AIR WAR COLLEGE

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THE INFORMATION BATTLESPACE:
A LEVEL PLAYING FIELD FOR THE ASYMMETRIC FOE

by

Timothy A. Herritage, Lieutenant Colonel, USAF

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Advisor: Colonel Kenneth M. Jones

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Biography

Lt. Col. Allen Herritage is assigned to the Air War College, Air University, Maxwell AFB, AL.

He has served in various roles as a public affairs officer including strategic communications advisor to the chief of staff of the Air Force, combat camera squadron commander and assignments at the wing, center, numbered Air Force, major command and headquarters levels as well as joint tours. He has deployed to Haiti in support of humanitarian exercises, Kyrgyzstan in support of Operation Enduring Freedom and to Iraq twice in support of Operation Iraqi Freedom.



Abstract

The current conflict the United States and its coalition partners are engaged in with the Islamic State of Iraq and Syria (ISIS) is largely ideological. The West's narrative of liberal democracy runs counter to that of ISIS's brand of Islamic extremism bent on Sharia law. ISIS recently revealed it has devoted significant effort to a domain that offers it a more even playing field in which to challenge those who oppose it. The skill with which it produced a video of the terrorist group's murder of a Jordanian pilot indicates an advanced understanding of visual communication. This and other instances of an increased emphasis on operations within the information battlespace deserve close scrutiny. The U.S. Air Force faces two major obstacles in contending with this issue: first, cultural and organizational emphasis on the communications requirements associated with equipping the Air Force as opposed to operational communications and second, the risk aversion endemic to large bureaucracies. This research paper will analyze instances of ISIS's increased, more sophisticated efforts in the realm of communication and using that information, will suggest strategies to overcome the obstacles to the Air Force contending with this challenge, not only with respect to ISIS, but any enemy seeking to engage in the information battlespace. Although these efforts overlap at times with what the U.S. military calls Psychological Operations or Military Information Support Operations, for the purposes of this paper, the analysis will focus solely on Public Affairs (PA) efforts to influence the enemy.

Introduction

The terrorist group ISIS recently revealed it has devoted significant effort to a domain that offers it a more even playing field in which to challenge those who oppose the group. The skill with which ISIS members produced a video of their murder of a Jordanian pilot indicates an advanced understanding of visual communication. This and other instances of an increased emphasis on operations within the information battlespace deserve close scrutiny. Such efforts should send a signal to the military and to the Air Force in particular—our enemies will seek to fight us in the arena of their choosing, not ours. The Air Force faces two major obstacles in contending with this issue: first, organizational emphasis on traditional air operations and the requirements to conduct those operations and second, the risk aversion endemic to large bureaucracies like military services.

Thesis

The U.S. Air Force, encumbered by self-imposed restrictions on operations within the information battlespace, will be challenged to counter enemy information efforts unless there is a change in how the service views operations within that contested environment.

ISIS's Efforts to Operate in the Information Battlespace

As terrorist organizations are wont to do, ISIS is adapting. No match for coalition military power and frustrated by an air strategy that negates their use of the insurgents' go-to weapons of improvised explosive devices and crudely aimed mortars, ISIS recently revealed that it has shifted its weight of effort to a domain that offers a more even playing field in which to challenge those who oppose it.

The video showing the gruesome burning death of Lt. Muath al-Kaseasbeh at the hands of his ISIS captors is evidence that the extremist group has made significant efforts to improve

its ability to communicate visually—to operate more effectively in the information domain.¹

The filming of a horrific murder is bound to get some attention but, unfortunately, these videos have become more prevalent in recent years. The latest video is different. From the beginning, it is clear the quality of the production is exponentially greater than the grainy, thrown-together material of previous films. According to Air Force video production expert, Jim Sorensen, “this production was obviously put together by some real professionals with significant training and expertise.”² The footage is shot in High Definition from multiple cameras. A graphic artist was used to incorporate imagery of flags, maps, jets and other sophisticated animations. It is clear that the production crew was versed in lighting and sound mixing.³ The camera angles suggest the photographers may have been schooled in cinematography according to Sorensen. Dollies and tracking systems known as sliders were likely used for moving shots. “This production unit was well-equipped,” said Sorensen.⁴

Equally as sophisticated as the equipment and production skills is the storytelling. The choice of locations, camera angles and movements, stock imagery, audio choices and graphics suggest pre-planning with a specific intent, according to Sorensen. The producers likely mapped out their production with a story-board prior to shooting video. The whole video takes on a theme of a trial, as if the murder at the end is somehow justified as a sentence carried out on a guilty Jordanian pilot. Throughout the video, news clips of President Obama and Jordanian King Abdullah are interspersed to add legitimacy, timeliness and relevance.⁵ The people who made this video wanted to tell a story that others would remember.

While this video and others suggests a high degree of communications expertise in a technical arena, other examples suggest ISIS is also pursuing relatively simple communications efforts that have achieved significant effects. A web search of public websites and social media

sites allowed ISIS to compile and publicly release a “hit-list” of U.S. military personnel.⁶ The list included about 100 names, photos and addresses of service members residing in the U.S. and called on “brothers residing in America” to carry out attacks on those listed.⁷ Despite ISIS claims that the list had been obtained via hacking by an advanced, tech-savvy division within the organization, it was soon determined it had actually been compiled via a simple web search of open source news websites and social media platforms and that a large number of the addresses were inaccurate or outdated.⁸

Still, even the chance that a brutal terrorist group like ISIS had obtained home addresses of military personnel and their families was chilling to Americans largely unaccustomed to the fear of terrorism in the homeland. In recognition of this, the military services scrambled to inform those listed of the threat and took actions to ensure their safety. Whether ISIS intended the threat to be carried out or not is up for debate. But it is highly likely ISIS leadership purposely sought the extensive media coverage and fear the hit list generated. By that measure, the effort was wildly successful.

More recent examples of ISIS communication efforts suggest awareness on its part of the limitations of focusing solely on messages of violence and brutality. According to the Wall Street Journal, there was a shift in their messaging this summer:

During a single month this summer, from mid-July to mid-August, Islamic State produced nearly 900 pieces of Arab-language propaganda, including radio broadcasts, public-service announcements, pamphlets and religious decrees. More than half of this output--52%--focused on quality-of-life issues like food, utilities and schools, while 37% was devoted to military themes. Scenes of brutality, like execution videos, comprised 2%.⁹

This shift seems to indicate two important facets of ISIS’s current communications strategy: First, that a perception of legitimacy is crucial to its objective. Second, that messages of brutality have limited utility in achieving that perception of legitimacy amongst the populations

ISIS seeks to control. Only time will tell if it is successful at achieving legitimacy, but the lesson for those seeking to counter ISIS in the information battlespace is clear—it is investing a lot of time thinking about communication.

Such efforts to engage America in the information domain are not limited to asymmetric foes. According to political analyst Bret Perry, an information campaign was critical to Russia's seizure of Ukraine in 2014. "Alongside its media efforts within Ukraine, Russia has also waged an effective information campaign against the international community leveraging a similar set of resources: 1) TV programs, and 2) a 'swarm' of pro-Russia internet commenters. These efforts, which revolve around denial and deception, distract international actors—hindering their response to the Ukrainian crisis."¹⁰ Additionally, China has adopted a concept of "Three Warfares" that seeks to shape the environment in which the People's Liberation Army would fight through psychological warfare, media warfare and legal warfare.¹¹ This information-focused footing is reflected in China's current efforts to settle territorial disputes in the South China Sea. Still, information dominance is especially tantalizing to would-be enemies incapable of mounting a conventional military campaign against the U.S.

In September of 2014, Defense Secretary Chuck Hagel, in a call for what would be called the Third Offset Strategy, warned that "disruptive technologies and destructive weapons once solely possessed by only advanced nations, have proliferated widely, and are being sought or acquired by unsophisticated militaries and terrorist groups."¹² Secretary Hagel was referring to weapons of mass destruction (WMD) in the hands of terrorists—the danger being that terrorists, unlike states who have access to WMD, are much more difficult to counter via current military capabilities. Though Secretary Hagel did not likely have video productions in mind in this address, the ISIS video production perfectly illustrates his point.

The proliferation of information technology and the ease of access to the internet have given terrorist groups communication capabilities comparable with the world's sole superpower. According to Sorensen, the Air Force's most advanced video production center would need about three weeks to create a video of similar quality as the video showing the death of the Jordanian pilot.¹³ The speed with which ISIS distributed this and other videos suggest that it is not encumbered by an extensive approval process which U.S. military communicators contend with regularly as a matter of policy. While ISIS may be unable to mount a conventional military attack on a state, its ability to communicate impactful messages to the world audience is increasing.

The question for DoD leadership is how well the nation's military is prepared to fight in the information domain. It is important to establish first that the U.S. military does conduct an informational campaign in addition to the kinetic campaign against ISIS. These efforts are intertwined, and it is safe to say the global awareness of the kinetic campaign against ISIS is due to that informational campaign. The joint services provide U.S. Central Command about 50-70 public affairs personnel for the purpose of conducting this mission.¹⁴ By virtue of the fact that a U.S. combatant command conducts informational warfare, the Air Force, as a member of the joint force, must provide forces trained and equipped to carry out that mission. How well prepared the U.S. Air Force is for carrying out this responsibility is an important question in light of ISIS's recent efforts. Public affairs professionals in the nation's youngest service face two obstacles in its effort to engage on the information front.

Obstacles to Air Force PA Success in the Information Battlespace

Obstacle 1: Organizational Emphasis on Communications Associated with Equipping the Air Force

The first obstacle is an organizational emphasis on the communication requirements associated with maintaining an Air Force as opposed to communications designed to defeat the enemy. This, characterization should be taken at face value as an objective assessment of the service's bureaucratic environment. The Air Force is responsible for operating in the air, space and cyber domains. Because the technology required to operate within those domains is highly advanced and expensive, the service engages in extensive communications efforts focused on those requirements.

In October of 2015, the Air Force announced it had awarded the contract for the next bomber to contractor Northrup Grumman. The cost of the Long Range Strike Bomber was so significant, at \$564 million per plane, that the press release to announce the decision was purposely delayed until after the closure for financial markets out of concern for the market effects of such a substantial deal.¹⁵ Air Force public affairs personnel had worked closely with acquisitions personnel for months to map out a communications strategy that took into account elements as specific as the timing, down to the hour, of the announcement. Again, this emphasis on the communications associated with acquisitions is not misplaced, but simply an example of the requirements of equipping a platform-based service.

The high cost of aircraft and the lengthy acquisition process by which they are purchased requires a significant communications efforts that is more corporate communications focused than operational. Public affairs Airmen are extremely adept at articulating to the American public and Congress the need for the next platform and what it brings to the joint fight. But this

skillset comes at the cost of developing skills required to communicate with another audience—the enemy.

Public affairs Airmen deploy in support of combat operations like those against ISIS where they may be required to advise commanders on conducting interviews with Pan-Arab press despite minimal experience with that very specific type of media. They might be called on for advice in countering enemy social media efforts. Combat Camera Airmen, a division of public affairs, might be called upon to produce a video to communicate specific messages to a regional audience without any cultural training or experience in that region. Airmen who fly aircraft are trained extensively on how to carry out combat operations in their specific weapons system before they are qualified to deploy. Even though there are some areas of communications expertise that overlap between the operational and corporate communications, many public affairs Airmen go to war with training and experience that is largely irrelevant to the fight.

Fortunately, the immediate ramifications of sending less prepared communicators to a conflict are much less immediate than sending ill-prepared aircrew. But in the long term, there are costs associated with a lacking communications effort that could have strategic ramifications. Still, there are manageable solutions to this dilemma that will result in an Air Force that is better prepared to operate in the information battlespace and more capable of contending with challenges like that posed by ISIS.

Recommendation 1A: Assign Public Affairs Officers to Operational Squadrons

First, the Air Force needs junior public affairs officers to begin thinking like operators at an early stage in their career. The typical wing construct places first-assignment lieutenants in a wing public affairs office led by a civilian, captain or major depending on the size and mission of the unit. These officers are often put in charge of base newspapers that focus on operationally

insignificant subjects like ribbon cuttings at building dedications or coverage of awards ceremonies. Instead, these young officers should be assigned to operational flying squadrons where they report to the squadron commander. They would be administratively assigned to the wing public affairs office and receive mentorship and career guidance from those more experienced public affairs officers and noncommissioned officers. But their day-to-day efforts would be in support of the squadron. They would deploy with the squadron.

PA support to the squadron could take on many forms including the management of media coverage of the unit, maintenance of social media efforts, briefing the local community on aircraft capabilities or creating multimedia products. In reality, many of these tasks are very often carried out from the wing PA office. The difference is the operational focus that comes from working in an operational unit and reporting to an operational squadron commander. PA Airmen would learn to think operationally. The Airmen learn to ask the question, “How does this support combat operations the unit will undertake?”

There is an important second order effect that comes with this arrangement. Operators in the unit learn to think communicatively as daily interactions with a PA officer make them more aware of how they are supported from a communications perspective and how their efforts support communications objectives. Additionally, putting a PA officer under the command of an operational squadron commander allows that squadron commander to learn how to utilize a professional communicator at the 16-18-year point in his or her career. Under the current construct, wing command, which occurs at the 22-26 year point in a career (if at all) is the first time a commander experiences leadership over a communications effort. The combination of more operationally-minded PA officers and commanders with increased awareness of public affairs at an earlier stage in their career is a good start to creating a culture that values

communication and subsequently improves the Air Force's ability to engage in the information battlespace—but there is more that can be done.

Recommendation 1B: Embed PA in Information Major Command

In a recent visit to Joint Base San Antonio-Lackland, Air Force Chief of Staff, General Mark A. Welsh III said, "In about 10 to 12 years, I think we should have a major command focused on information. It should be about collecting it, processing it, and disseminating it..."¹⁶ General Welsh's comments indicate an increasing awareness among Air Force senior leadership of the importance of information as it relates to warfighting. This is evidence that the service's focus on traditional air operations may be adapting to meet the requirements of 21st century warfare and serves as a second opportunity to improve the Air Force's ability to engage in the information domain.

Though General Welsh's comments focused primarily on cyber efforts and Intelligence, Surveillance and Reconnaissance (ISR) as the thrust of the notional command, operationally focused public affairs would be a more than appropriate addition to such a unit. There, public affairs personnel could work hand in hand with intelligence personnel to study enemy communications efforts, trends in operational communications and the constantly changing information environment. Establishing an information warfare-focused public affairs directorate within the information command would go far in improving the service's capability to provide operationally minded communicators to the combatant command.

Information Command public affairs personnel would be responsible for educating the career field on operational communications efforts. This would require close ties to combatant commands and theater command staffs in order to ensure up-to-date, relevant information.

Additionally, an assignment at Information Command should be an important stop for a public affairs officer's career progression, just as holding the position of a wing chief of public affairs is an important stepping stone for current officers.

Much like the recommendation to place public affairs lieutenants in operational squadrons, this recommendation benefits the non-PA personnel in the unit. The notional command would likely be manned by intelligence, cyber and operational personnel—all of whom could complete a career in today's Air Force without ever having worked with a public affairs officer. After spending a portion of their career with public affairs personnel in pursuit of information dominance, these personnel would become more aware of public affairs' capabilities and how those capabilities can affect the enemy. These changes would indicate an increased emphasis on communications as a role the Air Force is responsible for carrying out, which highlights another obstacle to the service's ability to engage in a more contested information environment.

Obstacle 2: Risk Aversion in Large Bureaucracies

In 2008, then Army Lieutenant General Bill Caldwell was wrestling with changing the Army's culture to take advantage of the new communication venues offered by social media. In a Small Wars Journal blog post on the topic, he said, "Soldiers are encouraged to take the initiative and calculated risk in the operational battlefield because we understand the importance of maintaining the offensive. However, once we move into the informational domain, we have a tendency to be zero defect and risk averse."¹⁷ That General Caldwell's comments were made during combat operations seven years ago, yet are still relevant in 2016, is indicative of a significant obstacle to DoD's operating effectively in the information battlespace—military

culture does not view communicating publicly, even in the name of defeating an enemy, worthy of the risk that act might entail.

In the years that have passed since General Caldwell identified this risk aversion, the services have made a concerted effort to utilize social media. All services now make use of Facebook, YouTube and Twitter. Many general officers maintain personal social media accounts that they personally use to communicate with multiple audiences. And in 2013, the Air Force published a guide for the use of social media and in doing so, encouraged its use among Airmen.

Despite these efforts, senior leaders still decry DoD's overall inability to engage in the information battlespace. In a recent address to Air War College, a combatant commander lamented the services' inability to beat enemy information efforts due to an organizational culture that requires oversight and approval processes that stifle the effectiveness of communication efforts:

I gotta tell you, when it comes to information warfare, I am a pessimist. The speed and power of a lie requires an incredibly agile, not only agile, but willing force to fight. We are not willing to take the field at the speed that our opponents are. We first need policy decisions that say we are willing to sacrifice some of our internal oversight or internal mechanizations to match the speed of our opponent so that we can put dedicated fighters on the problem and give them mission type orders, empower them to move out and let them counterattack at speed.¹⁸

Some of the internal oversight and mechanizations referred to by the general are the extensive approval processes military personnel must work through in order to inform the public.

In general, public affairs personnel must seek approval from the commander, the higher headquarters public affairs staff or, in some cases, both, before engaging publicly. This process moves fairly quickly when reacting to media queries. But proactive efforts receive much more scrutiny and can take days or weeks to be approved.

A large part of this reluctance to communicate is based on the risk-versus-reward calculation that military culture inculcates in its leaders. The idea of saying something publicly that will be reported internationally within seconds is fraught with career risk. This risk is magnified in today's information environment where individuals armed with smart phones and internet access can broadcast to a larger audience than CBS could during the Vietnam War. An Air Force general recently learned this lesson the hard way when he likened the act of speaking out publicly against the service's position on a controversial issue with Congress to committing treason. The story quickly earned national attention and the general was reprimanded and removed from his post.¹⁹ This is an extreme example but it illustrates the message many senior leaders receive regarding communicating publicly—engage at your own peril.

Unfortunately, there is no simple recipe for success in creating an organizational culture that values communications to a degree in which risk will be accepted. There are, however, courses of action that will put the military on a track to begin to change this culture.

Recommendation 2A: Get Leadership Onboard

The first step has been accomplished. The acknowledgment by senior leaders like combatant commanders that risk aversion and self-imposed restrictions on communications have limited the military's ability to engage the enemy is essential. But blog posts and speeches alone will not inspire lower level commanders to view communications more favorably. The next step must be taken by public affairs officers and lower level commanders, to take the generals to task and seek out opportunities to communicate. Retired colonel and former wing commander Michael Bob Starr wrote a commentary in April of 2015, in response to ISIS's publishing of the personal information of military families. With the help of Air Force PA personnel at the Pentagon, he was able to get it published in a widely read national newspaper, *USA Today*. In it,

he condemned the ISIS hit list as an act of cowardice, but the broader theme of the article was to express the importance of actively engaging the enemy in the information battlespace.²⁰ He described the fight against ISIS as a battle of two competing narratives and goes so far as to characterize that fight as more important than the physical conflict saying:

The U.S. launches airstrikes every day to strike ISIL targets in support of our allies and freedom fighters in Iraq and Syria. If our adversaries could do something to prevent those warplanes from taking off, it would be a great victory for their side. Preventing us from telling our story, however, would be far more effective and represent an even greater victory.²¹

With continued support and encouragement from senior leadership and the PA community, more commanders will engage in this type of communication and erode the culture of risk aversion associated with communicating publicly. A worthy goal is to inspire more wing and squadron commanders to write, speak and blog—to engage in the information front. The next step in overcoming this obstacle involves engaging the other end of the personnel spectrum.

Recommendation 2B: Take Advantage of Innate Communicative Skill of Airmen

Young Airmen view communication very differently than older generations. They have never known a time when there was no internet. Cell phones were commonplace before they were born. Where kids used to complain about typing classes in high school, today's children are typing pros before they hit middle school. The second way to overcome the obstacle of communications risk aversion is to embrace and capitalize on the advanced communicative abilities of today's younger Airmen.

There are many ways to go about doing this, but the first must come from the top. Senior leaders must encourage lower level commanders to make the most of this talent by encouraging young officers and enlisted members to utilize these skills. This has already begun. In 2014, Air Force Chief of Staff, General Mark Welsh initiated a contest in which he challenged Airmen to

tell the story of their Air Force experience in 90-seconds or less via smartphone video camera. The videos were uploaded via YouTube and judged by anyone who accessed the site.²² The idea of senior leadership encouraging Airmen to go around their workplace with video cameras and film themselves for public release, without consulting public affairs, would be unheard of just a few years ago. This is the kind of trust that can change culture. But there must be broader, institutional efforts to the same end.

Recommendation 2C: Teach Public Affairs in PME

Professional Military Education (PME) is required of all members of the Armed Forces. Recognizing the need for America's warriors to be thinkers as well, the services spend a significant amount of time and money to ensure service members receive continuous education. Despite senior leaders' comments regarding the importance of communication, the Air Force does not currently include public affairs training in any of its three officer PME programs. At the intermediate and senior level courses, officers spend a year as full-time resident students. This is a perfect opportunity to train officers in how they can engage in the information battlespace.

Captains should receive basic media training or tactical communications training. Majors should be trained how to integrate communications into theater campaigns or operational communications training. And senior level officers should learn how military communications efforts support national security objectives at the strategic level. Enlisted members should receive similarly tailored training in Airman Leadership School, Noncommissioned Officer Training and Senior Noncommissioned Officer Training. This repeated emphasis on communications is crucial to inspiring calculated risk-taking in the communications realm, but more importantly, this training would be given to all Airmen, not just public affairs personnel. It

also signals recognition on the part of public affairs personnel that they have a role as facilitator in leveraging the innate communication capability in today's Airmen. Rather than *convincing* Airmen to become communicators, this effort would *develop* them into the type of communicators that a service needs to be successful in today's information environment.

The Challenge to Implementing Recommendations

Whether or not the Air Force will take such steps to improve its ability to operate in the information battlespace is in question. The first place to seek the answer to such a question is the public affairs community. To be sure, public affairs personnel are not the only Airmen responsible for public communication. Commanders, lawyers, legislative liaison officers, and others all collaborate on communication plans and speak publically on behalf of the Air Force in varying roles. That said, all public communication is coordinated at some level with public affairs personnel and for that reason, the state of Air Force public affairs career field can be used as a bellwether for how the service views the importance of public communication.

Since 1994, public affairs officer manning has been cut at a higher rate than those cuts to Air Force officers as a whole. Currently there are more active duty generals in the service (262) than there are active duty public affairs officers (258). Of the four services, the Air Force has the lowest manning percentage of its public affairs officer's billets. This is most telling at the Lieutenant Colonel (O-5) rank where the Army, Navy and Marine Corps are manned at 95%, 98% and 100% respectively. The Air Force only fills 44% of its public affairs Lt. Colonel billets.²³ These numbers are only a single indicator and should be viewed in context of other factors such as the downsizing following conflicts and budgeting constraints like sequestration. Still, the timing of these reductions, concurrent with the rise of the internet and globalization, is troubling. As the globe has become more interconnected, and opportunities for communication

have increased exponentially, the Air Force has reduced the manning of the officers devoted to communicating on behalf of the service.

Conclusion

For all the airtime ISIS is getting via the news media and Congress, the terrorist organization still does not pose an existential threat to the U.S. The recommendations made in this paper are not intended to instill fear or increase the degree of threat assigned to ISIS. Rather, they should be taken as recognition that the information battlespace is becoming increasingly contested and that the changes required to engage more effectively in it are largely cultural.

Airpower legend General Henry “Hap” Arnold coined the term “air-mindedness” to describe the “...particular expertise and . . . distinctive point of view” of Airmen.²⁴ All of the recommendations for improving the Air Force’s ability to operate in the information battlespace are focused on the mindset of Airmen—there are no suggested changes in tactics or strategic course corrections. None of the recommendations call for major manpower increases or bolstering of the public affairs budget. There is, however, a common thread among them all—that the key to improving the way Airmen communicate is to change the way they think about communication and how it relates to airpower.

Airmen are already beginning to change the way they think about airpower as a whole. In a 2015 address, General Welsh discussed the need to begin building a sixth generation aircraft saying, “I think it’s important that everybody understand, this isn’t necessarily an airplane. It’s how do you provide air dominance down the road? There are probably a number of things you have to do to do that...”²⁵ Could General Welsh be referring to a platform that employs information more than kinetic weapons and allows Airmen to operate more effectively in the information battlespace? It wouldn’t be the first time for Airmen. Airmen have been thinking

about communication for a long time, and it has had varying level of importance to the service's mission throughout its history. Just three years after the Wright brothers' first flight of an airplane, the United States recognized the military utility of such an invention and established a flying unit. Where did they place this new technology? They assigned the airplane to the signal corps, the branch devoted to communication.²⁶



Notes

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- ¹ CBS News and the Associated Press, "Jordanian pilot's "obscene" burning death by ISIS sparks outrage in Mideast," 4 February 2015, <http://www.cbsnews.com/news/jordanian-pilots-obscene-burning-death-by-isis-sparks-outrage-in-mideast/>.
- ² Jim Sorensen (Director of Operations, Operating Location H, Air Force Public Affairs Agency), interviewed by author, 3 Dec 2015.
- ³ Ibid.
- ⁴ Ibid.
- ⁵ Ibid.
- ⁶ Nancy Youssef, "ISIS Hackers' Googled Their Hit List; Troops' Names Were Already on Public Websites," The Daily Beast, 23 March 2015, <http://www.thedailybeast.com/articles/2015/03/23/isis-hackers-googled-their-hit-list-troops-names-were-already-on-public-websites.html>.
- ⁷ Daniel Costa-Roberts, "ISIS publishes online hit list of US service members," PBS Newshour, 22 March 2015, <http://www.pbs.org/newshour/rundown/isis-publishes-online-hit-list-us-service-members/>.
- ⁸ Nancy Youssef, "ISIS Hackers' Googled Their Hit List; Troops' Names Were Already on Public Websites," The Daily Beast, 23 March 2015, <http://www.thedailybeast.com/articles/2015/03/23/isis-hackers-googled-their-hit-list-troops-names-were-already-on-public-websites.html>.
- ⁹ Margaret Coker and Alexis Flynn, "Islamic State Tries to Show It Can Govern in Iraq and Syria," The Wall Street Journal, 13 October 2015, <http://www.wsj.com/articles/in-a-shift-islamic-state-tries-to-show-it-can-govern-1444779561>.
- ¹⁰ Bret Perry, "Non-Linear Warfare in Ukraine: The Critical Role of Information Operations and Special Operations," Small Wars Journal (blog), 14 August 2014, <http://smallwarsjournal.com/jrnl/art/non-linear-warfare-in-ukraine-the-critical-role-of-information-operations-and-special-opera>.
- ¹¹ Timothy A. Walton, "China's Three Warfares," Delex Special Report-3, 18 January 2012, www.delex.com/data/files/Three%20Warfares.pdf.
- ¹² Chuck Hagel, "'Defense Innovation Days' Opening Keynote (Southeastern New England Defense Industry Alliance)," 3 September 2014, <http://www.defense.gov/News/Speeches/Speech-View/Article/605602>.
- ¹³ Jim Sorensen (Director of Operations, Operating Location H, Air Force Public Affairs Agency), interviewed by author, 3 Dec 2015.
- ¹⁴ Pat Ryder (Director of Public Affairs, USCENTCOM), interviewed by author 24 November 2015.
- ¹⁵ Lara Seligman, Andrew Clevenger and Aaron Mehta, "Northrop Grumman Wins Air Force's Long Range Strike Bomber Contract," Defense News, 28 October 2015, <http://www.defensenews.com/story/defense/2015/10/27/northrop-grumman-wins-usaf-bomber-contract/74661394/>.
- ¹⁶ "CSAF sees cyber, ISR as future major command," AF.mil, 10 September 2015, <http://www.25af.af.mil/news/story.asp?id=123457980>.
- ¹⁷ Bill Caldwell, "Changing the Organizational Culture (Updated)," Small Wars Journal (blog), 3 February 2008, <http://smallwarsjournal.com/blog/changing-the-organizational-culture-updated>.
- ¹⁸ Unidentified Combatant Commander, (address, Air War College, Maxwell AFB, AL, 27 October 2015).
- ¹⁹ Brian Everstine, "2 star's 'treason' comments spark call for an investigation," Air Force Times, 22 Jan 2015, <http://www.airforcetimes.com/story/military/capitol-hill/2015/01/22/james-post-a10-comment-investigation/22155219/>.
- ²⁰ Michael Bob Starr, "B-1 wing chief: Bytes & bits beat bombs in ISIL war," USA Today, 20 April 2015, <http://www.usatoday.com/story/opinion/2015/04/20/isil-story-telling-battle-against-extremism-intimidation-kill-list-column/25763171/>.
- ²¹ Ibid.
- ²² Leslie Waters, "American Airmen video contest winner announced at AFA," AF.mil, 16 Sept 2014, <http://www.af.mil/News/ArticleDisplay/tabid/223/Article/497420/american-airmen-video-contest-winner-announced-at-afa.aspx>.
- ²³ Kathleen Cook, "SAF/PA - On A Glidepath To Non-Sustainability," Spring 2015.

²⁴ Dr. Dale Hayden, "Air-Mindedness," Air and Space Power Journal, (Winter 2008), <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj08/win08/hayden.html>.

²⁵ Otto Kreisher, "Navy, Air Force Collaborate on Defining Next-Gen Fighter Capabilities," <http://www.tampabaydefensealliance.com/news/navy-air-force-collaborate-defining-next-gen-fighter-capabilities>.

²⁶ "Missions Part One: From the Signal Corps to the Air Corps," AF.mil, <http://www.airforce.com/learn-about/history/part1/>.



Bibliography

- Air Force official website. "History, Missions Part One: From the Signal Corps to the Air Corps," AF.mil, <http://www.airforce.com/learn-about/history/part1/>.
- Air Force official website. "CSAF sees cyber, ISR as future major command," AF.mil, 10 September 2015, <http://www.25af.af.mil/news/story.asp?id=123457980>.
- Caldwell, Lieutenant General Bill. "Changing the Organizational Culture (Updated)," *Small Wars Journal* (blog), 3 February 2008. <http://smallwarsjournal.com/blog/changing-the-organizational-culture-updated>.
- CBS News and the Associated Press. "Jordanian pilot's 'obscene' burning death by ISIS sparks outrage in Mideast," 4 February 2015, <http://www.cbsnews.com/news/jordanian-pilots-obscene-burning-death-by-isis-sparks-outrage-in-mideast/>.
- Coker, Margaret and Alexis Flynn. "Islamic State Tries to Show It Can Govern in Iraq and Syria," *The Wall Street Journal*, 13 October 2015, <http://www.wsj.com/articles/in-a-shift-islamic-state-tries-to-show-it-can-govern-1444779561>.
- Cook, Brigadier General Kathleen, Secretary of the Air Force Public Affairs. Subject: SAF/PA – On a Glidepath To Non-Sustainability, Spring 2015.
- Combatant Commander. Address. Air War College, Maxwell AFB, AL, 27 October 2015.
- Costa-Roberts, Daniel. "ISIS publishes online hit list of US service members," *PBS Newshour*, 22 March 2015, <http://www.pbs.org/newshour/rundown/isis-publishes-online-hit-list-us-service-members/>.
- Everstine, Brian. "2 star's 'treason' comments spark call for an investigation," *Air Force Times*, 22 Jan 2015, <http://www.airforcetimes.com/story/military/capitol-hill/2015/01/22/james-post-a10-comment-investigation/22155219/>.
- Hagel, Chuck. Keynote Speech "Defense Innovation Days" (Southeastern New England Defense Industry Alliance)," 3 September 2014, <http://www.defense.gov/News/Speeches/Speech-View/Article/605602>.
- Hayden, Dr. Dale. "Air-Mindedness." *Air and Space Power Journal* (Winter 2008). <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj08/win08/hayden.html>.
- Kreisher, Otto. "Navy, Air Force Collaborate on Defining Next-Gen Fighter Capabilities," <http://www.tampabaydefensealliance.com/news/navy-air-force-collaborate-defining-next-gen-fighter-capabilities>.

Perry, Bret. "Non-Linear Warfare in Ukraine: The Critical Role of Information Operations and Special Operations," *Small Wars Journal* (blog), 14 August 2014,
<http://smallwarsjournal.com/jrnl/art/non-linear-warfare-in-ukraine-the-critical-role-of-information-operations-and-special-opera>

Seligman, Lara, Andrew Clevenger and Aaron Mehta, "Northrop Grumman Wins Air Force's Long Range Strike Bomber Contract," *Defense News*, 28 October 2015,
<http://www.defensenews.com/story/defense/2015/10/27/northrop-grumman-wins-usaf-bomber-contract/74661394/>.

Starr, Colonel Michael Bob. "B-1 wing chief: Bytes & bits beat bombs in ISIL war," *USA Today*, 20 April 2015, <http://www.usatoday.com/story/opinion/2015/04/20/isil-story-telling-battle-against-extremism-intimidation-kill-list-column/25763171/>

Walton, Timothy A. "China's Three Warfares," *Delex Special Report-3*, 18 January 2012,
www.delex.com/data/files/Three%20Warfares.pdf.

Waters, Master Sergeant Leslie. "American Airmen video contest winner announced at AFA." *AF.mil*, 16 Sept 2014,
<http://www.af.mil/News/ArticleDisplay/tabid/223/Article/497420/american-airmen-video-contest-winner-announced-at-afa.aspx>.

Yousef, Nancy. "ISIS Hackers' Googled Their Hit List; Troops' Names Were Already on Public Websites," *The Daily Beast*, 23 March 2015,
<http://www.thedailybeast.com/articles/2015/03/23/isis-hackers-googled-their-hit-list-troops-names-were-already-on-public-websites.html>.